6. (Amended) A method according to claim 1 in which the variables comprise surface temperature measurements and the sensor comprises a microwave antenna adapted to detect radiation emitted from or reflected off the surface.

A1 combined

7. (Amended) A method according to claim 1 in which more than one set of linear equations is used and each linear equation in a set may be allocated a weighting, with different weightings used for each set.

8. (Amended) A method according to claim 1 in which the sensor is adapted to receive information radiated or reflected from a footprint on the surface to produce a data sample and the linear equations may then be calculated from data samples corresponding to a number of such footprints for different surface areas.

11. (Amended) A method according to claim 1 in which each bounded area is smaller than the size of each footprint for the data samples.

A2

12. (Amended) A method according to claim 1 in which each data sample used to construct the set of linear equations corresponds to a footprint covering a different but overlapping area of the surface.

13. (Amended) A method according to claim 1 in which the boundaries are defined by reprojecting the data samples onto a GIS map of the surface.

14. (Amended) A method according to claim 1 in which the weights, α, are based on the convolution for the gain function of the receiver with the boundaries of the area surface sensed.

A3 cancelled

16. (Amended) A software program for implementing on a computer adapted to perform a method in accordance with claim 1.

19. (Amended) A method according to claim 17 in which the weighting coefficients are associated with the directional sensitivity of the sensor(s) used to capture the set of original signals.

A4 20. (Amended) A method according to claim 17 in which the processed signal for each mapping region is determined by assuming it to be a constant value and solving a redundant, or solvable, number of simultaneous equations which each have the processed signal as one parameter, and weighted values derived from the original signals as other parameters, the weighting and the original signals being known.

21. (Amended) A method according to claim 17 in which the mapping regions are representative of real physical features known to be present in the scene being viewed by the image-gathering apparatus.

A5 24. (Amended) A method according to claim 22 in which the method comprises processing the original signals to obtain a plurality of values for at least some pixels of the original pixellated field of view.

A6 26. (Amended) A software carrier carrying software which when operational on a computer or network operates the computer or network according to the method of claim 1.

29. (Amended) Apparatus according to claim 27 in which the image capturing means comprises a microwave antenna or an infrared receiver.

A7 cont. 30. (Amended) Apparatus according to claim 27 in which the image capturing means is mounted on a remote sensing vehicle such as a satellite, aeroplane or ship.

31. (Amended) A satellite system, or other remote sensing platform or installation having one or more sensors having an overlapping field of view so as to produce overlapping unprocessed